THE CLAIMS

1. A method for correcting aberrations in an optical system, comprising:

applying a light adjustable aberration conjugator layer to a component of the system;

either before or after applying said conjugator layer, determining the nature of the aberration; and

applying radiation to the conjugator layer such as to modify the refraction of the conjugator layer to compensate for the aberration.

2. The method of claim 2 in which the desired irradiation pattern is obtained by aberration-feedback.

3. The method of Claim 1 in which radiation is applied to the conjugator layer in a pattern that corresponds to the correction of the aberration.

4. The method of claim 3 in which the pattern that corresponds to the aberration is opposite in phase to the measured aberration.

5. The method of claim 3 in which the pattern of the radiation is controlled and monitored while the conjugator layer is irradiated.

6. The method of claim 1 in which the intensity and duration of the irradiation is controlled.

7. The method of Claim 1 in which the conjugator layer comprises a polymer matrix and a radiation sensitive refraction modulating composition dispersed therein.

8. The method of claim 1 in which the radiation is ultraviolet light obtained from a source thereof.

9. The method of claim 3 in which an ultraviolet vertical-cavity surface-emitting laser array is used to generate the pattern and project it onto the surface of the conjugator layer.

10. The method of claim 3 in which the pattern is obtained by projecting ultraviolet light through an apodizing filter having a predetermined transmission intensity profile.

11. The method of claim 3 in which the pattern is obtained by projecting ultraviolet light through a liquid crystal display.

12. The method of claim 3 in which the pattern is obtained by reflecting ultraviolet light from a digital light processor.

13. The method of claim 11 in which aberration-feedback is obtained from a Shack-Hartmann sensor.

14. The method of claim 12 in which aberration-feedback is obtained from a Shack-Hartmann sensor.

15 The method of claim 1 including the step of irradiating the entire conjugator layer to lock in the modified refraction.

16. The method of claim 15 in which the modified refraction of the conjugator layer is locked in by patterned radiation.

17. The method of claim 15 in which the radiation has a "top hat" intensity profile.

18. The method of claim 15 in which the radiation is has an intensity profile that diminishes as the radius increases.

19. The method of Claim 1 in which the conjugator layer is applied to the surface of a lens.

20. The method of Claim 1 in which the conjugator layer is applied to the surface of a mirror component of a reflective telescope.

21. The method of Claim 1 in which the conjugator layer is applied as an integral part of said component.

22. An optical element comprising a combination of a light refracting or reflecting element and layer thereon of a light adjustable aberration conjugator.

23. The optical element of Claim 22 in which said combination is integral.

24 The method of claim 1 including the step of irradiating the conjugator layer with aberration compensating radiation having an intensity profile that changes as the radius of the pattern increases.